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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/605,521	10/06/2003	Jay Yu	VIAP0086USA	2520
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27765	7590	08/18/2004
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NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE)
P.O. BOX 506
MERRIFIELD, VA 22116

EXAMINER


NADAV, ORI

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 08/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/605,521	Applicant(s) YU ET AL.	
	Examiner ori nadav	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 00/000000.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION***Claim Objections***

Claims 3-6 are objected to because of the following informalities: Claim 3 recites the limitation "the conductive element" and "the inductor" in line 2. There is insufficient antecedent basis for this limitation in the claim.

. Appropriate correction is required.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a first conductive trace formed on the top wiring layer (the first wiring layer), as recited in claim 1, and conductive traces disposed on separate wiring layers, as recited in claim 3, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites a second wiring layer is disposed below and parallel to a first wiring layer. That is, the first wiring layer is the top layer. Figure 3 depicts first and second conductive traces formed between the first and second wiring layers. There is no support in the disclosure for a first conductive trace formed on the top wiring layer (the first wiring layer), as recited in claim 1, and there is also no support for conductive traces disposed on separate wiring layers, as recited in claim 3.

Figure 3 depicts a plurality of conductive traces formed on a first wiring layer. There is no support for a plurality of conductive traces formed on a plurality wiring layers, as recited in claim 3.

Figure 3 depicts a plurality of conductive traces formed on first and second parallel wiring layers, interconnected by vias. There is no support for a conductive trace having at least an end disposed coincident with an end of a conductive trace disposed on a separate layer, as recited in claim 3.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claimed limitation of wiring layer(s) of a printed circuit board, as recited in claims 1 and 3, is unclear as to the structural relationship between the wiring layer(s) and the printed circuit board.

The claimed limitation of each conductive trace having at least an end disposed coincident with an end of a conductive trace disposed on a separate layer, as recited in claim 3, is unclear as to how the end of each conductive trace can coincident with an end of a conductive trace disposed on a separate layer, since the conductive traces are formed on parallel wiring layers.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1-6, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Liou (6,037,649) in view of Gardner (6,452,247).

Liou teaches in figure 2A and related text a printed circuit inductor comprising:

- a first conductive trace formed on a first wiring layer M2;
- a second conductive trace formed on a second wiring layer M1, wherein the second wiring layer M1 is disposed below and parallel to the first wiring layer M2, the layers being separated by an insulating material;
- a third conductive trace formed on the first wiring layer and parallel to the first conductive trace;
- a fourth conductive trace formed on the second wiring layer and parallel to the second conductive trace;
- a first via plug 24 directly connected to a first end of the first conductive trace and a first end of the second conductive trace;
- a second via plug directly connected to a second end of the second conductive trace and a first end of the third conductive trace; and
- a third via plug directly connected to a second end of the third conductive trace and a first end of the fourth conductive trace.

Liou does not state that the device is formed on a printed circuit board.

Gardner teaches in figure 1 forming an inductor on a printed circuit board 10.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form Liou's device on a printed circuit board in order to use the device in practical application.

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Regarding claim 2, Liou teaches in figure 2A and related text the first via plug is perpendicular to the first conductive trace, the second via plug is perpendicular to the second conductive trace, and the third via plug is perpendicular to the third conductive trace.

Regarding claim 3, Liou teaches in figure 2A and related text a printed circuit inductor comprising;

- a plurality of conductive traces formed on a plurality of wiring layers of a printed circuit board, wherein the conductive element of the inductor is formed from interconnected conductive traces disposed on separate wiring layers M1, M2, M3 each conductive trace having at least an end disposed coincident with an end of a conductive trace disposed on a separate layer allowing interconnection by a via;

- a plurality of insulating layers 21, 23, 26 for isolating the conductive layers from each other; and

- a plurality of via plugs each directly connecting the conductive traces on different conductive layers.

Regarding claims 4-6, Liou teaches in figure 2A and related text a plurality of conductive layers is formed having two layers, wherein the plurality of via plugs is perpendicular to the plurality of conductive layers, and wherein the magnetic field generated by the inductor is in parallel with the conductive layers.

Response to Arguments

Applicant argues that Liou does not teach via plugs directly connected to the conductive traces, because Liou teaches the necessity for an intermediate second-level metal lines M2.

Liou teaches via plugs directly connected to the conductive traces located between the first wiring layer M1 and the intermediate second-level metal lines M2.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(571) 272-1660**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308- 0956**

A handwritten signature in black ink, appearing to read 'Ori Nadav', with a stylized, cursive script.

O.N.
8/14/04

ORI NADAV
PATENT EXAMINER
TECHNOLOGY CENTER 2800

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